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Reading people or reading minds: A précis of *Do Apes Read Minds?: Toward a New Folk Psychology*

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Mind reading and person reading

How is it that we humans are able to so easily coordinate our behavior with one another, to predict what others will do, and to make sense of behavior that we could not predict? A first answer is to refer to human folk psychology, which at its barest merely suggests that humans have some capacity or capacities for engaging in just those behaviors. Of course, we want to know what those capacities are, and this is where things get interesting. Typically, philosophers understand the term "folk psychology" as necessarily referring to the ability to mindread—or to attribute propositional attitudes to others[1] . I argue that mindreading plays only a secondary role in our folk psychology, and that we have a host of capacities we use that together can be considered a form of person reading. On this view, the folk do not understand one another primarily as receptacles of propositional attitudes, but rather as whole persons with histories, social contexts, personalities, moods, emotions, and so forth. The folk person-read rather than mind-read.

To illustrate the difference, consider some examples from great literature. The mindreading picture of human folk psychology is seen in Sir Arthur Conan Doyle's story "A Scandal in Bohemia" in which Sherlock Holmes needs to determine where Irene Adler hid a photograph of her illicit relations with hereditary King of Bohemia. In the story, Holmes attributes propositional attitudes; Irene desires to keep the photograph safe, and she knows where it is hidden. Given those attributions, Holmes predicts that if her home were to be aflame, and the photograph was hidden in the house, that she would do whatever she could to rescue it before fleeing. And so, of course, Holmes sets up a scenario in which her house appears to be on fire, and he observes her reaching into

her hiding spot. This story reflects the traditional view of folk psychology, with Holmes mindreading, and it is what Daniel Dennett had in mind when he devised the Sherlock Holmes method for animal cognition research.

But Sherlock Holmes also used a different method that hasn't been so widely recognized. In "The man with the twisted lip" Sherlock Holmes is searching for a respectable gentleman named Neville St. Clair, who was last seen in the window of an opium den without his collar or tie. But St. Clair isn't the sort of man who takes opium, and so Holmes has to construct a coherent model of the situation that fits with the sort of man St. Clair is. In this second story, Holmes is person reading, using stereotypes, social norms, and past behavior in order to predict what someone would do.

According to person reading, in our quotidian predicting, explaining, and coordinating behavior, we don't need to read minds. Rather than mindreading, we use a host of different cognitive strategies. Some of these, such as predicting that others will do what we tend to do (Krueger 1988) or relying on stereotypes and social roles to predict that people will do what they should do as members of society (Locksley et al. 1980), can be used with people we don't know at all. When we have close relationships with persons, we can use other strategies, such as inductive generalizations over one's past behavior (Kalish 2002), primary intersubjectivity (Trevarthen 1979), or trait attributions (Nisbett & Ross 1991). We also do attribute propositional attitudes, of course, but only in addition to other non-propositional mental states such as emotions and intentions.

On the person reading view of folk psychology, the only necessary conditions for being a folk psychologist is to view some others as intentional agents—to be able to distinguish between self-propelled entities and those entities whose movement is caused by external conditions—and to have success in at least some of the folk psychological practices such as predicting, explaining, or interpreting behavior.

Do we need to read minds to solve false belief tasks?

Given this model, we need not interpret passing the standard false belief tasks as evidence of mindreading ability, much less do we need to appeal to mindreading in order to explain infant behavior on such tasks. With the publication of Onishi and

Baillergeon's 2005 study finding that 15 month olds look longer when a person acts inconsistently with her false belief, some argued that infants are mindreading by this age, as evidenced by their surprise when someone acts according to a belief they shouldn't have. A number of studies on infant understanding of false belief suggest that humans come to understand false belief by their second year of life (Baillargeon et al. 2010). Infants demonstrate their sensitivity to people's false beliefs through spontaneous response tasks, such as helping an adult with a false belief (Buttelmann et al. 2009), anticipatory looking (Clements & Perner 1994; Garnham & Ruffman 2001; Southgate et al. 2007), and violation of expectation paradigms (Onishi & Baillargeon 2005; Song et al. 2008; Surian et al. 2007; Traüble et al. 2010).

The violation of expectation paradigm is used to test whether infants will look longer at actions that are inconsistent with the actor's false belief than they will look at actions that are consistent with false belief. The original task is modeled after the standard false belief task: infants are first familiarized with a scene including an observer, an object, and two boxes. The object moves into one box while the observer watches. While the actor is obscured, the object moves itself from one box to the other box. When the actor returns, she looks into one of the boxes. Infants stared at the scene longer when the observer looked into the box that currently held the object, rather than the box where the observer last saw the object. Onishi & Baillargeon interpret these and related findings as indicating that "even young children appeal to others' mental states—goals, perceptions, and beliefs—to make sense of their actions" (Onishi & Baillargeon 2005, 257).

These findings made headlines (at least in the small theory of mind crowd) because children are not supposed to understand theory of mind (as demonstrated by passing these sorts of false belief tasks) until they are about 4 years-old (Wellman et al. 2001). However, I think that the ability of infants to pass nonverbal versions of the task provides reasons to suspect that mindreading is what is going on even at the level of the 4 year-old child.

There are at least four alternative explanations for the children's behavior. According to the *associations or behavioral rules* hypothesis, children might form associations between people and their actions on objects that guide their future actions (Perner & Ruffman 2005) or, they might have a theory about how people behave in certain

situations, and generate new rules from observed behavior. (e.g., following Povinelli & Vonk 2004). According to the *reasoning from ignorance* hypothesis, children might expect that actors who are ignorant are more likely to make an error or be uncertain in their action (Southgate et al. 2007, Wellman 2010). According to the *explicit simulation or perspective taking* hypothesis, children might be able to ask themselves what they would do or desire if they were in the target's situation, or they might recognize that the target has a divergent perspective from themselves (e.g. following Gordon 1995). Finally, according to the *teleological understanding* hypothesis, children can understand another's goals without understanding anything about belief; knowledge of goals plus attribution of rationality might be sufficient for predicting behavior (e.g., following Csibra & Gergeley 1998).

The behavioral rules hypothesis alongside the person reading view hypothesis offers an alternative account of what is going on in the child's developing performance on the false belief task. Children are constantly learning about their world, and as they live among human actors they come to observe patterns of behavior. One pattern they come to expect is the "people look for things where they left them" pattern. Expectation of this pattern may start out implicitly, as is demonstrated in the infants, and later come to be explicitly accessible by older children who are passing the false belief task. While such children may know what someone is going to do next, they need not know why—that is, they need not have the reason the actor does as she does. In fact, when children who pass the verbal version of the false belief task are asked why the actor looked for the object in the wrong place, the most common sort of answer is "Because that's where she left it," offering additional support for the behavioral rules hypothesis (Andrews and Verbeek, unpublished data).

Further support for the claim that children are not mindreading to solve false belief tasks comes from research on the automaticity of mindreading in adults. In a series of studies, Ian Apperly and colleagues have found that it takes longer for adults to process questions about an actor's belief than about an object's position, unless the subject is told to keep track of the actor's belief (Apperly et al. 2006).

What do we need mindreading for?

If mindreading doesn't help us with predicting behavior in a false belief situation, does it help us deceive others? This is the assumption made by the Machiavellian version of the Social Intelligence Hypothesis (Humphrey 1976, 1980; Byrne and Whiten 1988), according to which understanding what others believe and what they want, allows one to come out on top in the very competitive primate social society. As individuals gain a more sophisticated theory of mind, they gain greater predictive success, and hence are better at deceiving and manipulating their conspecifics.

But if mindreading doesn't help to predict behavior, it shouldn't help in the kinds of deceptive cases promoted by the SIH advocates. Consider our Rylean ancestor, living in a world without mindreading, who wants to keep all the food for himself. He is a good scientist, even though he doesn't realize that others have beliefs or desires, and so he decides to manipulate the variables associated with his food finding. He realizes that when he finds food, he also vocalizes. So he withholds the vocalization, and notices that the others fail to steal his food. This leads him to engage in the tactically deceptive action of failing to vocalize when he wants to keep all the food to himself. Our Rylean ancestor knows how to manipulate others because he can predict their behavior, but he doesn't know why it works. He doesn't know why hearing his vocalization makes the others come. He doesn't need to know that in order to modify his behavior in this way. Once again, we have a case in which one can predict behavior without needing to explain it.

This raises the question about the evolutionary advantage of mindreading. Research in social psychology has looked at the kinds of explanations we give for behavior, and has found that while we do sometimes offer explanations in terms of beliefs and desires—mindreading explanations—we typically only do so when explaining our own behavior or trying to justify the behavior of another (Malle 2004; Malle, Knobe, & Nelson, 2007). Other times we give explanations in terms of enabling conditions, or the past history of the individual (Malle 2004). This means that there are normative goals associated with mindreading explanations—they serve to justify behavior that may have been looked upon poorly by group members. This leads me to construct an alternative

version of the social intelligence hypothesis, following the primatologist Alison Jolly (1966). Based on her expertise in lemur behavior, Jolly suggests that cooperative social learning rather than fierce social competition that explains why social animals need greater cognitive complexity. Social learning is a nonpedagogical method of learning which requires that a demonstrator tolerate the close observation of the learner, and in many cases the learner gains some of the benefits of the behavior being demonstrated. For example, in orangutan food processing the mother will allow her infant to peer at her complex manipulation of a ginger or termite nest, and she will allow her offspring to take pieces of processed food to eat. While this sort of learning doesn't involve active teaching, it does require acting differently toward individuals with differing abilities, and responding appropriately to different individuals depending on their current skill levels.

Thus, I hypothesize that the primary function of mindreading is for offering explanations. Mindreading explanations are constructed by individuals as a response to an affective tension, such as a state of curiosity, puzzlement, disbelief, etc. about a person or behavior. This affective tension drives explanation-seeking behavior. Once we have an explanation in terms of a person's beliefs and desires, we reduce our cognitive dissonance and resolve the tension that drove the explanation seeking to begin with. And with the person's mental states in hand, one also has the person's reasons for action. There is a two part benefit to mindreading explanation: the person's behavior is justified, and the explainer is able to come to see reasons for engaging in a behavior that was previously taken to be bizarre or confusing. It is in this way that mindreading explanations are able to promote technological advancements in a community.

In a world without mindreading, the only kinds of predictions that might benefit from attributing propositional attitudes are those in the face of anomalous or bizarre behavior. To predict behavior in an anomalous situation, we must first seek to understand the situation, and offer an explanation of behavior. Thus, predicting behavior based on the attribution of beliefs and desires relies on a prior ability to construe behavior as being explained by beliefs and desires. However, to develop the ability to explain behavior in terms of beliefs and desires, one must have first construed a situation as anomalous, bizarre, or inappropriate, and implies an understanding of normal behavior. Understanding behavior as normal suggests at least an implicit understanding of the

normative rules of society. Thus, before members of a species mindread, they have at least an implicit understanding of the normative rules.

These considerations suggest that Humphrey's story gets things backwards; understanding of beliefs and desires could not have been an adaptation for making better predictions of behavior, because before they began offering additional predictive power, the belief and desire concepts would have already been part of the cognitive repertoire. Rather, the adaptive function of a theory of mind has something to do with explaining behavior, rather than predicting it. Innovative behaviors are anomalous, and thus are not comprehensible either in terms of what others are doing or in terms of the situation. With mindreading, one is able to understand why another is behaving anomalously, and thus one can adopt the new behavior, which, like using fire for cooking, fishing, and other examples of tool construction, turn out to be valuable for the community.

As early hominids innovated behaviors whose functions were not transparent to observers, it is likely that group members needed to understand the reasons behind the new behaviors in order for the innovation to be adopted by the community. While the development of culture depends on innovators' neophilia, it also depends on the willingness of the community to tolerate norm violations. In a community that ostracized individuals for acting outside the norm, there would be fewer innovations. When people are shunned for acting abnormally, they are transformed from in-group members to out-group members. However, when community members seek an explanation for an individual's abnormal behavior, they are seeking reasons for the action that will serve to justify it. The close relationship between the practices of explaining and justifying behavior helps to bolster this hypothesis. Social innovations can create or strengthen an emotional bond between conspecifics, and this bond can be seen as the glue that holds the community together, even when its members don't see one another for long periods of time. In this way, explaining behavior can also promote moral development in a community.

If mindreading evolved for explaining behavior, how should this modify the search for mindreading in chimpanzees?

The attempt to answer the question about whether other species mindread has been working with false assumptions about mindreading, which I have tried to debunk. The problem begins with the assumption that mindreading evolved in order to help individuals better predict behavior, rather than to explain behavior. Premack & Woodruff (1978), Brian Hare (Hare et al. 2000), Robert Lurz (2011) all give predictive paradigms for seeking evidence of mindreading in apes. Given pluralism in explanation, and the alternative hypotheses available even for verbal versions of the false belief task performed on human children, I think it unlikely that any version of a nonverbal false belief task would convince the skeptics that chimpanzees have a theory of mind. Instead of looking for mindreading in prediction, I suggest we look for it in explanatory paradigms.

Why would we want to examine whether apes seek explanations? I have argued that belief attribution does primarily function to help humans predict behavior, but instead we think about others' beliefs in order to explain behavior, especially anomalous behavior. So, a better test of theory of mind in apes would be a test of whether apes explain behavior. However, given pluralism about explanatory contents, even here we may not gain evidence that apes understand belief. To uncover evidence that apes understand belief we can look at situations in which an ape is explaining another's anomalous behavior.

A behavioral description of explanation seeking goes as follows: one may express affective tension, such as puzzlement, by facial expression or bodily posture. Then one may engage in systematic exploratory behavior, as if looking to answer the explanatory question. Finally, evidence that an explanation has been accepted comes in the form of another emotional expression—one of satisfaction. This pattern of behavior follows the topography of explanation seeking in humans, including human children. Because the drive to explain comes about in the face of anomalous situations, this behavior should only be observed in response to an unexpected event that the potential explainer would have reason to explain. That is, given what we know about the function of explanation for humans, we would expect explanation seeking on the part of a mindreading chimpanzee who observed a friendly conspecific engage in an anomalous action. The relationship between the explainer and explanee is essential, for humans are most moved

to give reason explanations for themselves and others whom they consider core to their in-group—individuals whose behavior they want to justify.

However, setting up anomalous situations in the lab is hard. It is in natural situations that we are more likely to see the kind of explanation-seeking behavior that might provide evidence of understanding belief. But incidents reports suffer from the veneer of being unscientific. However, consider what leads us to think that young children explain. The main motivation isn't from experiments, but from watching their naturalistic behavior. I believe that we should use the same starting point when dealing with other apes.

As a final suggestion for how my account can be used to motivate research in animal mindreading, we can ask whether apes might need to explain anomalous behavior. I think that by looking at the innovation literature (e.g. Reader and Laland 2003) we could find the same sorts of reasons for animals to explain as we found for our hominid ancestors. So, for example, orangutans may benefit from explaining the swimming, fish eating, and fishing behavior of their group members, in order to learn how to gain access to this valuable food resource (as documented in Russon et al. 2010).

Summary

While humans don't mindread nearly as often as is sometimes thought, mindreading for explanation sake is a valuable contribution to human cognition and cumulative culture. When predicting behavior, coordinating behavior, deceiving others or otherwise doing future-looking folk psychology, humans rarely mindread. When they do mindread, they do so to make sense of behaviors done by in-group individuals that don't already make sense. This suggests to me that some normative understanding exists in species that can mindread, and that the origins of normativity should be found before such advanced cognitive achievements.

Notes

1. A quick look at some philosophy of mind textbooks makes this point clear. For example, Jaegwon Kim writes, "Folk psychology is our ordinary way of thinking and theorizing in psychological terms, and our utilization of propositional attitudes to explain and predict what people will do" (Kim 2006, p.15), and John Heil puts it this way, "The practice of explaining behaviour by reference to the propositional attitudes is sometimes labeled 'folk psychology'" (Heil 2004, p.152).

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